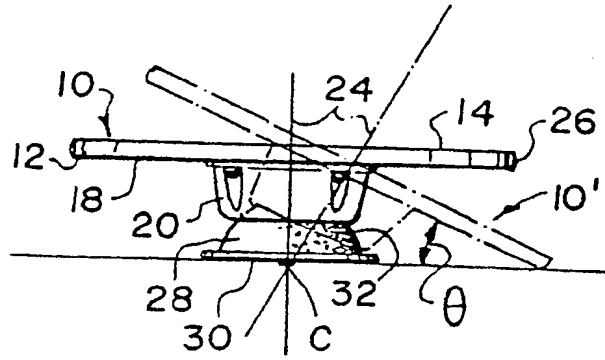


INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification⁴ : A63B 23/04	A1	(11) International Publication Number: WO 86/ 04250 (43) International Publication Date: 31 July 1986 (31.07.86)
(21) International Application Number: PCT/US86/00146 (22) International Filing Date: 23 January 1986 (23.01.86) (31) Priority Application Number: 694,008 (32) Priority Date: 23 January 1985 (23.01.85) (33) Priority Country: US (60) Parent Application or Grant (63) Related by Continuation US 694,008 (CIP) Filed on 23 January 1985 (23.01.85) (71)(72) Applicant and Inventor: HERMAN, Charles [US/ US]; 2211 Brittain, Fort Worth, TX 76111 (US).		(74) Agent: MICHALOS, Peter, C.; McGlew and Tuttle, 28 West 44th Street, New York, NY 10036 (US). (81) Designated States: AT (European patent), AU, BE (Eu- ropean patent), BR, CH (European patent), DE (Eu- ropean patent), DK, FI, FR (European patent), GB (European patent), IT (European patent), JP, KP, LU (European patent), NL (European patent), NO, SE (European patent), US. Published <i>With international search report.</i>
(54) Title: PLATFORM EXERCISE DEVICE		
		
(57) Abstract		
<p>A method and apparatus for exercising in particular the tendons and muscles in the feet and legs while improving coordination and balance. The device comprises a flat circular platform (12) having upper (14) and lower (18) circular surfaces and an outer circumferential rim (26) all centered about a central axis (24). A pedestal (20) having a concave socket (2) is connected to the lower surface (18) of the platform (12) and mates with a circular upper surface (32) of a base (28). The base (28) has a lower rim (30) provided with an anti-skid surface (38) and is placed on the floor with the pedestal and platform supported thereon. The platform (12) is capable of pivoting and rotating with respect to the base (28). To exercise using the device a person stands on the platform with the platform tilted so that one point of the circumferential rim (26) is in contact with the floor. The platform (12) is made to slowly rotate to bring successive portions of the platform rim (26) into contact with the floor. This produces a circular gimbal effect which produces stretching and exercising in the feet and lower legs.</p>		

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PLATFORM EXERCISE DEVICEFIELD AND BACKGROUND OF THE INVENTION

The present invention relates in general to exercise equipment and in particular to a new and useful exercise platform having a pedestal and base.

An exercise device is known which comprises a rectangular platform having a lower pivot support and base for permitting the platform to pivot from one side of the base to an opposite side of the base at two opposite acute angles to the floor. A person wishing to exercise with the platform stands on the platform with one foot on either side of the pivot point. As shifting one's weight from one foot to the other, the platform can be made to pivot into its two opposite acute angles. This simulates jogging. Such a device is available from M + R Gruss International of North Sidney, Australia.

Another exercise platform is also known which comprises a circular disc having a central downwardly projecting support. The platform is particularly useful in exercising the ankle and for improving balance and coordination. This

device however tends to move over the floor during an exercise operation. This type of exercise platform is available from Medipedic, a division of Camp International, Jackson, Michigan.

5 A need remains for an exercise device which produces a fully controlled simulation of athletic performance in the form of a full motion, bio-mechanical, functional exercise device to properly stretch tendons and develop
10 found that the lower extremities of the body are most likely to be injured either during athletic or even during routine everyday activities. This has been considered to be a result of the evolutionary changes which caused man to acquire an upright posture. This placed large burdens on
15 the lower extremities. See The Competitive Edge by Col. James L. Anderson and Martin Cohen. A device which can adequately exercise lower extremities would thus have clear value in avoiding injury and improving coordination, flexibility and balance, as well as muscle strength.

20 SUMMARY OF THE INVENTION

The present invention is directed to an exercise platform which can be used in several different exercise routines to improve the flexibility, coordination, balance and /symmetrical strength of the tendons and muscles in the feet and legs.

25 To achieve this purpose, the exercise device of the present invention comprises a flat circular platform having a central axis as well as an upper circular surface and a lower circular surface. These surfaces as well as a circum-

ferential rim defined around the platform are all centered about the axis. A pedestal is connected to the lower surface and includes a lower gimbal surface that is preferably concave and at least partly circular. A base having
5 a high friction no skid lower edge includes an upper gimbal surface which mates with the lower gimbal surface of the pedestal for permitting relative pivoting and relative rotation between the pedestal and the base.

In one mode of exercise, a person stands on the plat-
10 form with his or her feet slightly spaced and parallel. Balance can be maintained by holding onto a chair or wall. The platform is kept in an inclined position with one point of the circumferential rim in contact with the floor. The person then slowly rotates this point of contact while main-
15 taining the inclined orientation of the platform to execute a rolling pivotal movement around the central axis of the platform. More experienced exercisers can stand with their feet closer together and execute the rotational movement more quickly. These types of exercises improve balance and
20 coordination as well as stretch the tendons.

According to the invention, bases of different heights can be used for establishing different desirable inclination angles. A low base establishes an inclination of from about 20 to 25 degrees to the horizontal for some exercises and
25 for beginners with the device. The higher base can establish an angle of about 25 degrees for more experienced users. It is preferable to keep the angle of inclination below 30 degrees however in that, angles beyond that, over-stress the tendons.

An object of the present invention is thus to provide a platform exercising device which can be used to improve balance, coordination, flexibility and symmetrical strength.

A further object of the invention is to provide a
5 method of exercise utilizing the inventive device.

A still further object of the invention is to provide an exercise device which is simple in design rugged in construction and economical to manufacture.

The various features of novelty which characterize the
10 invention are pointed out with particularity in the claims annexed to and forming a part of this disclosure. For a better understanding of the invention, its operating advantages and specific objects attained by its uses, reference is made to the accompanying drawings and descriptive matter
15 in which preferred embodiments of the invention are illustrated.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

Fig. 1 is a top plan view of the exercise device according
20 to the present invention;

Fig. 2 is a side elevational view of the device shown in Fig. 1;

Fig. 3 is a partial side sectional view of the exercise device showing details of the pedestal;

25 Fig. 4 is a cross-sectional view showing details of a base for the device;

Fig. 5 is fragmentary sectional view of another embodiment of the base;

Figs. 6, 7 and 8 show three successive foot positions for use with the exercise device in a method of exercise in accordance with the present invention; and

Fig. 9 through 12 show various additional positions which can be used in other modes of exercise with the inventive device.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

10 Referring to the drawings in particular, the invention embodied in Figs. 1 and 2 comprises a platform exercise device generally designated 10 having a flat circular disc-like platform 12. Platform 12 has an upper surface 14 which is provided with one or more anti-skid coatings 16 such as
15 a textured rubber layer or the like. Platform 12 has a lower surface 18 which carries a pedestal 20. Pedestal 20 includes a lower gimbal surface 22 which is best shown in Fig. 3. Surface 22 is symmetrical about a central axis 24 of the platform 12. Surfaces 14 and 18 as well as an outer circum-
20 ferential rim 26 for platform 12 is centered about axis 24.

A base 28 is provided which has a lower rim 30 in contact with the floor and an upper gimbal surface 32 which at least partly conforms to the lower gimbal surface 22 of pedestal 20. Pedestal 20 can be thought of as a socket
25 member having a concave surface 22 for receiving the convex base 28. Pedestal 20 and base 28 may be made of plastic or metal. The plastic should be durable such as a plastic known

as high density polyethylene. The mating surfaces 22,32 can be somewhat textured to slightly resist the sliding movement between the surfaces. Sliding movement is a necessary feature of the invention however, so that smooth
5 surfaces are preferred.

Lower rim surface 30 of base 28 is provided with anti-skid means. As shown in Fig. 4, base 28 includes a radial flange 34 having a circular groove 36 which receives a flange of a rubber ring 38. The lower surface of rubber ring 38
10 contacts the floor for preventing lateral movement of base 28. Base 28 is preferably hollow and includes strengthening ribs 40 therein. Surfaces 22 and 32 are preferably spherical so that platform 12 can rotate as well as pivot into any position with respect to the base.

15 The anti-skid mechanism of Fig. 5 includes a channel or U-shaped rubber ring 42 provided on flange 34' of a base 28'.

Fig. 2 shows a base having a lower vertical height than the base 28 of Fig. 4. The lower base provides a preferred angle of inclination θ between the plane of the platform 12 and the floor of from about 20 to 22 degrees.
20 The higher base of Fig. 4 provides an angle of about 25 degrees. In any case the height of the combined pedestal and base should not cause platform 12 to exceed an angle of
25 30 degrees with respect to the horizontal in order to avoid an over stretching of tendons while using this exercising device.

Fig. 6 shows a correct beginning position for a person's feet on the platform 12. The feet are held slightly spaced apart and parallel to each other. To exercise with the device, the platform is rolled in the direction of arrow 44 shown in Fig. 7. This moves a point of contact between the rim 26 of the platform 12 and the floor from point 50 shown in Fig. 6 to point 52 shown in Fig. 7. The rocking movement proceeds to continue moving the point of contact around the rim as shown in Fig. 8. The axis 24 can be thought of as rotating around to generate a cone shown in chain line in Fig. 7. The center of this cone is at the center of curvature of the lower and upper gimbal surfaces 22, 32.

Due to the difference between the diameter of circumferential 26, and the outer diameter of the contact surface between the surfaces 22 and 32, platform 12 will also tend to rotate as it is pivoted. Its direction of rotation will be opposite to the direction of rotation for the axis 24 and opposite to the direction of arrow 44 which shows the movement of the point of contact 50 (52) between the rim and the floor.

A more experienced user of the inventive exercise device can hold his or her feet more closely together but still parallel.

Fig. 9 shows how a person can exercise their hamstring in a stretching exercise using the inventive device. Fig. 10 shows the person exercising their lower back. While in Fig. 9 the knees are held straight in Fig. 10 the knees are slightly bent.

Fig. 11 shows how the device can be used for exercising the quadriceps.

Fig. 12 shows how the inventive device can be used to exercise the upper body. The hands are held on the platform 12 in the same way that the feet were supported on the platform in Fig. 6 and the axis of the platform is rotated as in Fig. 7. One can even sit on the exercise device of the invention and execute the movement of Fig. 7 for exercising the hips and waist.

10 While specific embodiments of the invention have been shown and described in detail to illustrate the application of the principles of the invention, it will be understood that the invention may be embodied otherwise without departing from such principles.

What is claimed is:

1. An exercise device comprising:

a flat circular platform having a central axis as well as an upper circular surface, a lower circular surface and a circumferential rim all centered around said axis;

5 a pedestal connected to said lower surface and defining a lower gimbal surface which is symmetrical with respect to said axis;

a base having a lower support surface adapted for engagement with a horizontal plane, said base having an upper
10 gimbal surface engaged with said lower gimbal surface of said pedestal, said upper and lower gimbal surfaces being at least partly co-extensive for permitting pivoting and relative rotation between said pedestal and said base; and
anti-skid means at said support surface of said base
15 for preventing translation of said base over said horizontal plane;

whereby said axis can be rotated to generate a cone having a center at a center of curvature of said upper and lower gimbal surfaces while maintaining one point of said
20 circular rim in contact with the horizontal plane.

2. An exercise device according to claim 1, wherein said upper and lower gimbal surfaces are each spherical, said lower gimbal surface being concave and said upper gimbal surface being convex.

3. An exercise device according to claim 2, wherein said base includes a lower flange extending radially outwardly, said anti-skid means comprising an elastomeric coating at least on the lower surface of said flange.

4. An exercise device according to claim 3, wherein said elastomeric coating comprises an annular ring having a U-shaped cross-section engaged around said flange.
5. An exercise device according to claim 3, wherein said flange includes a circular groove therein, said elastomeric coating including a radial projection extending into said rim and forming an annular ring having a T-shaped radial cross-section.
6. An exercise device according to claim 5, wherein said pedestal is hollow, said pedestal including a radially extending flange with fasteners connected through said flange and into said platform for connecting said pedestal to said platform.
7. An exercise device according to claim 6, wherein said base is hollow.
8. An exercise device according to claim 7, including a non-skid surface coating on at least a portion of said upper circular surface of said platform.
9. An exercise device according to claim 1, wherein a combined vertical height of said base and engaged pedestal is selected so that with one point of said circumferential rim of said platform in contact with the horizontal plane, said platform makes an angle of less than 30° with respect to the horizontal plane.
10. An exercise device according to claim 9, including one additional base having an additional low support surface and an additional upper gimbal surface engageable with said lower gimbal surface of said pedestal, said additional base having

5 a different vertical height than said first mentioned base so that a different angle of inclination can be established between said platform and the horizontal plane when said additional upper gimbal surface is engaged with said lower gimbal surface.

11. An exercise device according to claim 10, wherein with said first mentioned upper gimbal surface engaged with said lower gimbal surface an angle of about 25° is established between said platform and the horizontal plane and with said
5 additional upper gimbal surface engaged with said lower gimbal surface an angle of about 21° is established between said platform and the horizontal plane.

12. A method of exercising using a flat circular platform having an upper circular surface, a lower circular surface and a circumferential rim all centered about a central axis of the platform, a pedestal connected to the lower surface
5 of the platform and including a lower gimbal surface and a base having an upper gimbal surface engaged with the lower gimbal surface and supportable on a horizontal plane for permitting rotation and pivotal movement between the platform and the horizontal plane, comprising:
10 supporting at least part of a person's body on the upper circular surface;
bringing one point of the circumferential ring into contact with the horizontal plane; and
rotating the point of contact between the rim and the
15 horizontal plane to cause the access of the platform to define a cone in space having a center at a center of curvature of the upper and lower gimbal.

13. A method according to claim 12, including standing on the platform with one of the person's feet on one side of the

central axis and the other of the person's feet on the other side of the central axis.

14. A method according to claim 12, including placing one of the person's hands on one side of the central axis and the other of the person's hands on an opposite side of the central axis for supporting the person's upper body.

15. A method according to claim 12, including sitting on the upper surface.

FIG. 1

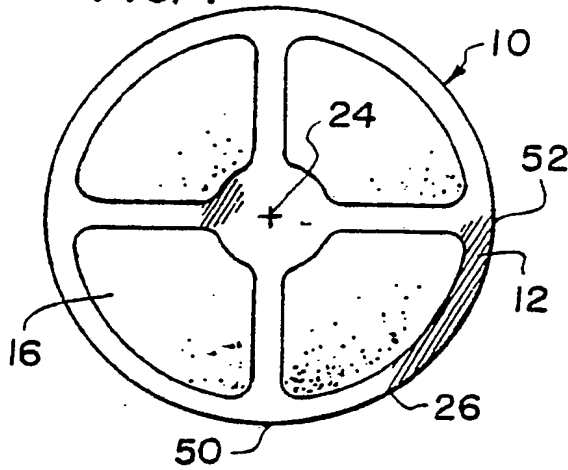


FIG. 2

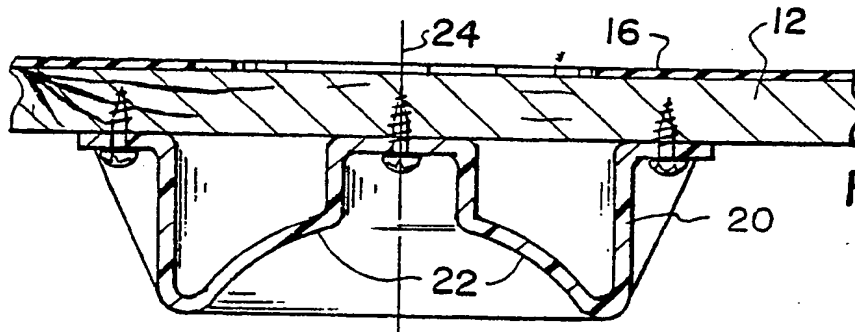
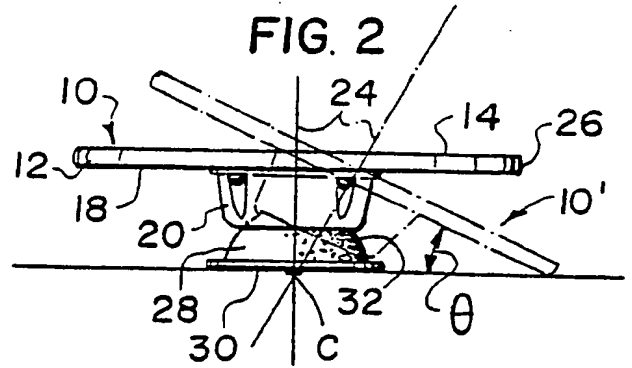


FIG. 3

FIG. 4

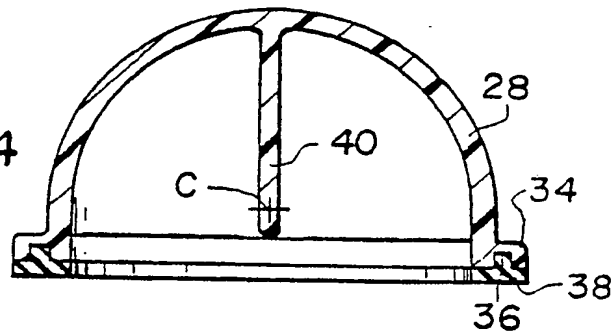


FIG. 5

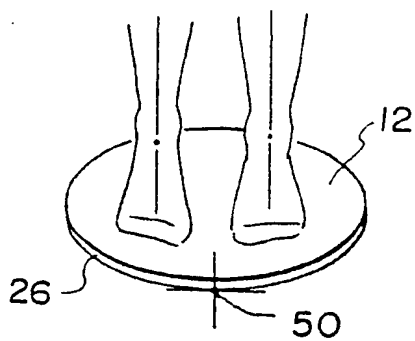
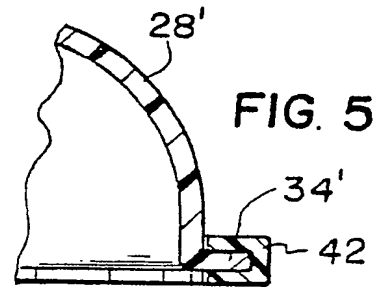


FIG. 6

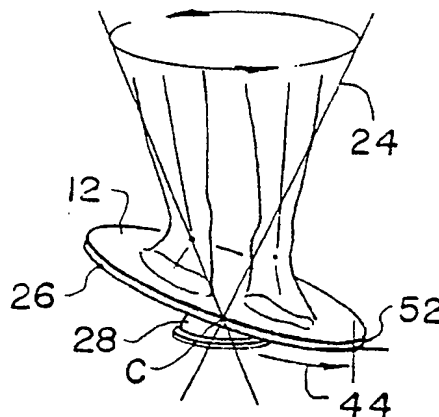


FIG. 7

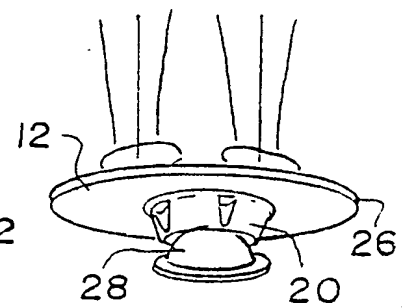


FIG. 8

FIG. 9

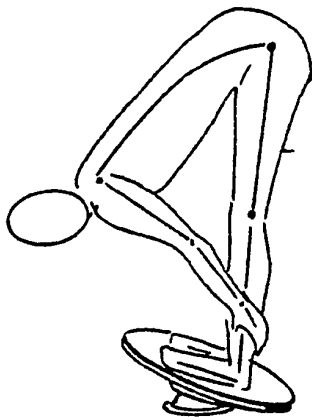


FIG. 10

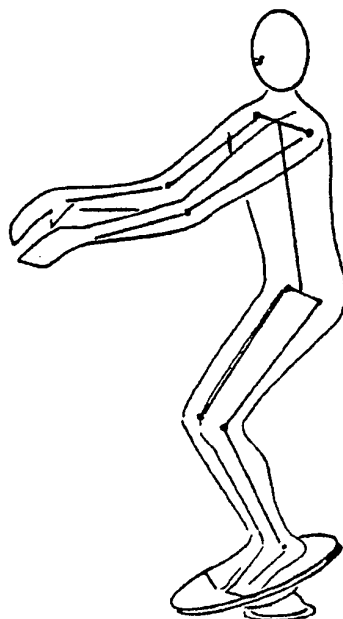
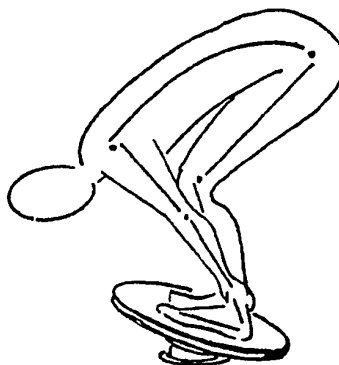


FIG. 11

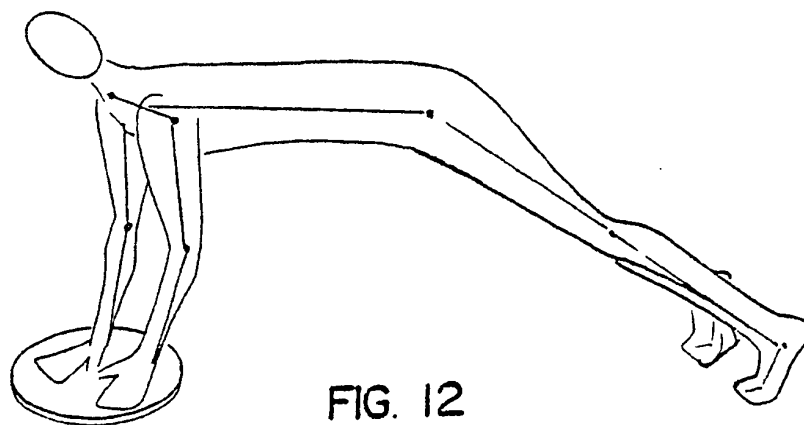
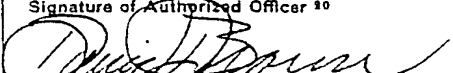


FIG. 12

INTERNATIONAL SEARCH REPORT

International Application No PCT/US86/00146

I. CLASSIFICATION OF SUBJECT MATTER (If several classification symbols apply, indicate all) ³		
According to International Patent Classification (IPC) or to both National Classification and IPC		
INT. Cl. ⁴ A63B 23/04 INT. Cl. U.S. Cl. 272/146		
II. FIELDS SEARCHED		
Minimum Documentation Searched ⁴		
Classification System	Classification Symbols	
U.S.	272/33A, 55, 70, 93, 109, 114, 115, 146	
Documentation Searched other than Minimum Documentation to the Extent that such Documents are Included in the Fields Searched ⁵		
III. DOCUMENTS CONSIDERED TO BE RELEVANT ¹⁴		
Category ⁶	Citation of Document, ¹⁶ with indication, where appropriate, of the relevant passages ¹⁷	Relevant to Claim No. ¹⁸
A	US, A 4,491,318 01 January 1985 Francke	1-15
Y, P	US, A 1,565,484 15 December 1985 McWhirter	1-15
Y	US, A 3,761,084 25 September 1973 Dieckmann	1-15
Y	FR, A 2,510,895 11 February 1983 Daninos	1-15
Y	US, A 3,593,994 20 July 1971 Anbar	1-15
<div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <p>¹⁵ Special categories of cited documents:</p> <p>"A" document defining the general state of the art which is not considered to be of particular relevance</p> <p>"E" earlier document but published on or after the international filing date</p> <p>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</p> <p>"O" document referring to an oral disclosure, use, exhibition or other means</p> <p>"P" document published prior to the international filing date but later than the priority date claimed</p> </div> <div style="width: 45%;"> <p>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</p> <p>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step</p> <p>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.</p> <p>"&" document member of the same patent family</p> </div> </div>		
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